Amendments to the Specification

Please replace the paragraph beginning at page 2, line 15, with the following rewritten paragraph:

Unfortunately, experience has shown that use of Helmholtz coils configured as described above interferes with other peripheral power sources, and ~~require~~ requires a substantially larger clean-room facility to house the CPB microlithography apparatus. Also, the efficiency with which floating magnetic fields actually are shielded using this approach (i.e., the "shielding ratio") is limited to approximately 1/10, which is insufficient for attaining satisfactory results. Another problem with this approach is that it is ineffective for canceling stray magnetic fields produced by sources (e.g., linear motors used for actuating the reticle and substrate stages) located between the optical axis of the CPB microlithography apparatus and the Helmholtz coils.

Please replace the paragraph beginning at page 2, line 27, with the following rewritten paragraph:

In view of the shortcomings of conventional approaches for reducing floating magnetic fields, as summarized above, the present invention provides, *inter alia*, charged-particle-beam (CPB) microlithography systems exhibiting improved cancellation of floating magnetic fields with an improved shielding ratio, without having to ~~excessively~~ enlarge the system excessively.

Please replace the paragraph beginning at page 4, line 6, with the following rewritten paragraph:

The reticle typically is mounted on a reticle stage situated between the illumination-optical system and the projection-optical system. In such a system configuration, the magnetic-field sensor and the magnetic-field-compensation coil desirably are situated between the illumination-optical system and the reticle stage. ~~(Generally,~~Generally, the axial space between the illumination-optical system and the reticle is wider than the respective space between the

reticle and the projection-optical system. Hence, placing the magnetic-field sensor and magnetic-field-compensation coil between the illumination-optical system and the reticle stage provides efficient utilization of space in the CPB microlithography system.

Please replace the paragraph beginning at page 5, line 15, with the following rewritten paragraph:

The device can be configured such that the magnetic-field sensor comprises a coil configured to serve as both a magnetic-field sensor coil and a magnetic-field-compensation coil. In this configuration, the magnetic-field sensor and the magnetic-field-compensation coil are combined to provide a commensurate reduction in the number of components of the CPB optical system, allowing the system to be made more compact. With such a configuration, rather than regulating ~~an~~<u>the</u> electrical current~~,~~ flowing to the compensation coil ~~so~~ <u>in a manner</u> that <u>reduces</u> the magnetic field detected by the coil ~~becomes 0~~ <u>substantially to zero magnitude</u>, the ~~question of the~~ specific ~~multiple~~ <u>ratio</u> of the detected magnetic field <u>relative to</u> the generated magnetic field ~~should be~~ can be experimentally determined. The compensating electrical current has a magnitude established according to the ratio. This allows, for the first time, the effects of external magnetic fields to be completely canceled.

Please replace the paragraph beginning at page 5, line 27, with the following rewritten paragraph:

In addition, by using a ~~method whereby~~ coil ~~is used~~ as ~~the~~<u>a</u> magnetic sensor to measure ~~the~~ floating magnetic field<u>s</u> between exposure<u>s</u> ~~transfers~~ and <u>using a</u> coil ~~is used as the~~<u>for generating a compensating</u> magnetic field ~~compensation coil~~ during exposure<u>s,</u> ~~transfer and~~<u>passing</u> an electric current ~~that would~~<u>through the coil</u> negate<u>s</u> the measured floating magnetic field ~~is caused to flow, the floating magnetic field can be negated~~.

Please replace the paragraph beginning at page 9, line 30, with the following rewritten paragraph:

A representative embodiment of an arrangement of the search coil 8 and the magnetic-field-compensation coil 9 is shown in FIGS. ~~2(A)-2(B)~~2(a)-2(b). FIG. ~~2(A)~~2(a) is an elevational section along the line A-A' in FIG. ~~2(B)~~2(b), and FIG. ~~2(B)~~2(b) is an "underside" plan view along the line B-B' in FIG. ~~2(A)~~2(a). The magnetic-field-compensation coil 9 comprises three separate compensation coils, one for each Cartesian axis. Specifically, item 31 is a z-axis-direction magnetic-field-compensation coil, item 32 is an x-axis-direction magnetic-field-compensation coil, and item 33 is a y-axis-direction magnetic-field-compensation coil. In a similar manner, the search coil 8 comprises three separate coils, one for each Cartesian axis. Specifically, item 34 is a z-axis-direction search coil, item 35 is an x-axis-direction search coil, and item 36 is a y-axis-direction search coil. Item 37 is the pole piece of the illumination lens 5, and item 38 is the pole piece of the first projection lens 11.

Please replace the paragraph beginning at page 12, line 19, with the following rewritten paragraph:

In the embodiment described above, the search coils and respective magnetic-field-compensation coils are configured so as to be located separately from each other. Alternatively, selected coils can be combined to provide shared functions. Specifically, the numerical factor by which the electrical current detected by the search coil is related to the opposite-phase electrical current required for reducing beam perturbation to zero can be determined experimentally in advance. Upon detection of an electrical current by the search coil, an electrical current corresponding to that ratio can be delivered to the respective compensation coil. In addition, in a step-and-repeat exposure apparatus, there is a prescribed time interval from exposure of one subfield to exposure of the next subfield, during which interval ~~and~~ measurements of external magnetic fields can be performed. External-magnetic-field compensations may be performed using the same coils during exposure.